

**WHAT IS CLAIMED IS:**

- 1 1. A method of fabricating a polysilicon emitter in a semiconductor transistor having an  
2 emitter window exposing a base region, the method comprising:  
3 forming a first polysilicon layer within the emitter window on at least the base region;  
4 forming an interfacial oxide layer in an upper portion of the first polysilicon layer;  
5 and  
6 forming a second polysilicon layer on the interfacial oxide layer.
- 1 2. The method of claim 1, wherein the emitter window is approximately .1 to .2  $\mu\text{m}$   
2 wide.
- 1 3. The method of claim 1, wherein the first polysilicon layer is formed to a thickness of  
2 approximately 30 to 100 Å.
- 1 4. The method of claim 3, wherein the interfacial oxide layer is formed by exposing  
2 oxygen to the first polysilicon layer and annealing.
- 1 5. The method of claim 3, wherein the interfacial oxide is formed to a thickness of  
2 approximately 5 to 50 Å.
- 1 6. The method of claim 5, wherein the second polysilicon layer is formed to a thickness  
2 of approximately 500 to 5000 Å excluding the depth of the emitter window.
- 1 7. The method of claim 1, wherein forming the second polysilicon layer comprises ion-  
2 implanting dopants into the second polysilicon layer.

1 8. The method of claim 1, further comprising annealing after forming the second  
2 polysilicon layer to diffuse dopants from the polysilicon emitter and into the base region.

1 9. A polysilicon emitter in a semiconductor transistor having an emitter window  
2 exposing a base region, comprising:  
3 a first polysilicon layer within the emitter window on at least the exposed base region;  
4 an interfacial oxide layer on the first polysilicon layer; and  
5 a second polysilicon layer on the interfacial oxide layer.

1 10. The polysilicon emitter of claim 9, wherein the emitter window is approximately .1 to  
2 .2  $\mu\text{m}$  wide.

1 11. The polysilicon emitter of claim 9, wherein the first polysilicon layer is less than  
2 approximately 100 Å thick.

1 12. The polysilicon emitter of claim 11, wherein the interfacial oxide is less than  
2 approximately 50 Å thick.

1 13. The polysilicon emitter of claim 12, wherein the second polysilicon layer is  
2 approximately 500 to 5000 Å thick excluding the depth of the emitter window.

1 14. A method of fabricating a bipolar transistor, comprising:  
2 forming a collector region within a substrate;  
3 forming a base region on the collector region;  
4 forming an emitter dielectric layer on the base region;  
5 forming an opening through the emitter dielectric layer to form an emitter window  
6 exposing a portion of the base region;

7 forming a first polysilicon layer within the emitter window on at least the exposed  
8 base region;  
9 forming an interfacial oxide layer in an upper portion of the first polysilicon layer;  
10 and  
11 forming a second polysilicon layer on the interfacial oxide layer.

1 15. The method of claim 14, wherein the emitter window is approximately .1 to .2  $\mu\text{m}$   
2 wide.

1 16. The method of claim 14, wherein the first polysilicon layer is formed to a thickness of  
2 approximately 30 to 100 Å.

1 17. The method of claim 16, wherein the interfacial oxide layer is formed by exposing  
2 oxygen to the first polysilicon layer and annealing.

1 18. The method of claim 16, wherein the interfacial oxide is formed to a thickness of  
2 approximately 5 to 50 Å.

1 19. The method of claim 17, wherein the second polysilicon layer is formed to a  
2 thickness of approximately 500 to 5000 Å excluding the depth of the emitter window.

1 20. The method of claim 14, wherein forming the second polysilicon layer comprises ion-  
2 implanting dopants into the second polysilicon layer.

1 21. The method of claim 14, further comprising annealing after forming the second  
2 polysilicon layer.

1 22. A bipolar transistor, comprising:  
2 a substrate having a collector region;  
3 a base region on the collector region;  
4 an oxide layer on the base region, the oxide layer having an opening therethrough to  
5 form an emitter window exposing a portion of the base region;  
6 a first polysilicon layer at least within the emitter window and on at least the exposed  
7 base region;  
8 an interfacial oxide layer on the first polysilicon layer; and  
9 a second polysilicon layer on the interfacial oxide layer.

1 23. The bipolar transistor of claim 22, wherein the emitter window is approximately .1 to  
2 .2  $\mu\text{m}$  wide.

1 24. The bipolar transistor of claim 22, wherein the first polysilicon layer is less than  
2 approximately 100 Å thick.

1 25. The bipolar transistor of claim 24, wherein the interfacial oxide is less than  
2 approximately 50 Å thick.

1 26. The bipolar transistor of claim 25, wherein the second polysilicon layer is  
2 approximately 500 to 5000 Å thick excluding the depth of the emitter window.